

PROBLEM SET 1

due Tuesday, January 17.

Do all the problems. Every problem is worth 5 points. Some problems will not be graded because of time constraints.

Folland, Ch. 3, No. 22, 23 (extra credit), 25, 28, 31, 35, 37, 38 (extra credit), 40, 42 (extra credit).

Extra credit. Assume that both f and its maximal function Hf are in $L^1(\mathbf{R}^k)$, then $f = 0$ a.e. [m].

Hint: If $f \neq 0$ then there exists $c = c(f) > 0$ such that $(Hf)(x) \geq c|x|^{-k}$.